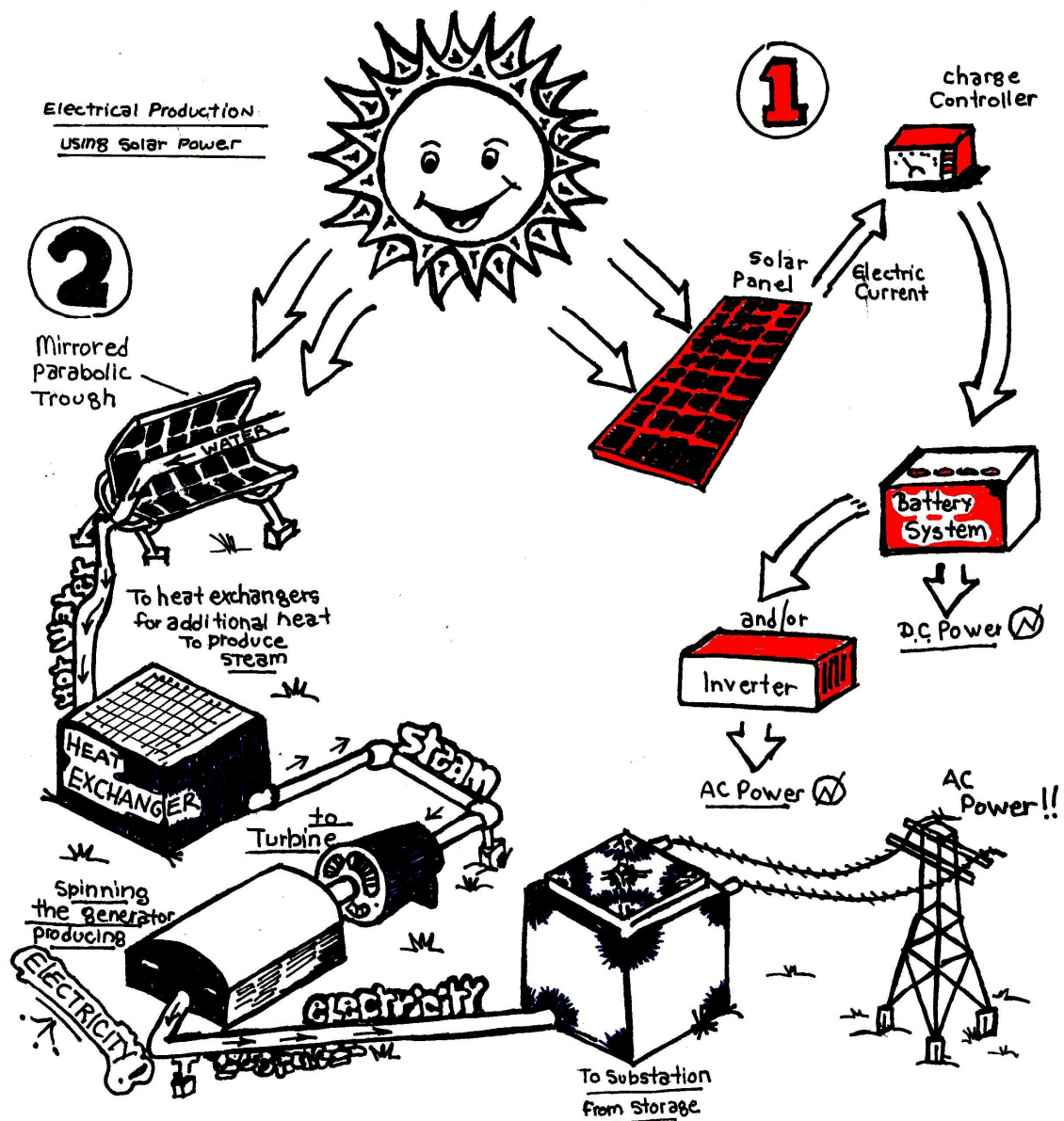


To “Go Solar” Or Not To “Go Solar”



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SUMMARY

The many and varied incentives to “go solar” – from saving the planet to saving a buck – are being looked at by homeowners, utility companies and government agencies alike. Stimulated by the state’s mandate to achieve the goal of obtaining 20% of our energy from renewable sources by 2010 and 33% by 2020, all parties are urgently looking at the alternatives.

- The homeowner has choices: for older homes, an energy audit will show the areas where improvements will reduce consumption by installing insulation, replacing single pane windows, replacing obsolete air conditioning and heat units and the like. A solar installation on a home with a suitable roof could produce enough energy to power the entire home.
- Commercial and government buildings have the same options for retrofit and rooftop solar.

- Government buildings, parking structures and schools with lots of roof surface are great candidates for rooftop solar.
- Utility companies face the challenge to find ways to obtain a greater percentage of the energy they sell from renewable sources. Hence, the interest from PG&E in the opportunity to obtain a large amount of renewable energy from the proposed Carrizo plains solar projects.

This report will examine the varied and complicated aspects involved in the decisions as to how the homeowner, the county and the utility companies will spend their energy and their money in the quest for renewable energy.

ORIGIN / PURPOSE

This report originated from a perceived lack of information and direction in the county on the topic of “renewable energy.” In order to conform to the mandate from the state, we must make changes in all areas of energy usage: where energy is obtained, conservation of energy use and clean sources of energy. How can the individual citizen contribute to the effort? What programs are the civic leaders offering and supporting? What role does the utility company play?

To provide some perspective, consider the following:¹

- Today, the total power consumption for all humans on earth is approximately 16 terawatts per year.
- In the year 2020, the demand is expected to grow to 20 terawatts annually.
- The power contained in the sunshine which strikes solid earth is estimated at 120,000 terawatts annually.
- From this perspective, energy from the sun is virtually unlimited.

¹ National Geographic Magazine, September 2009, quoting Eicke Weber, Director of the Fraunhofer Institute for Solar Energy Systems, Freiburg, Germany

- In 2008, renewable energy resources supplied about 7% of U.S. total energy consumption.
- In that same year, less than 1% of the nation's electricity was from solar power.

It would appear that we are not utilizing the full potential of solar power.

METHOD

The Grand Jury interviewed staff of County Government, a representative from PG&E and a local solar distributor / installer. Information was gathered from the Internet, newspaper articles (The Christian Science Monitor, The Tribune, Los Angeles Times, New York Times) and magazines including “ The National Geographic Magazine,” “Scientific American,” “Smithsonian,” “Scientific Daily,” and “Science Magazine.”

BACKGROUND

Explanation of terms

- **Watt** -- named after inventor James Watt (1736 – 1829), a Watt is the basic unit of electrical energy.
- **Kilowatt (KW)** – one thousand (1,000) Watts
- **Megawatt (MW)** – one million (1,000,000)Watts
- **Gigawatt (GW)** – one billion (1,000,000,000)Watts
- **Terawatt (TW)** – one trillion (1,000,000,000,000)Watts

History Lesson

In 1839, a scientist discovered that certain materials produced small amounts of electricity when exposed to sunlight. Photovoltaic (PV) is the word that describes converting sunlight to electricity. It took more than 100 years for the concept of electricity from sunlight to become more than just an experiment, and practical application lagged even further behind.

Over the years, there have been numerous programs, incentives and tax credit offers, by the White House and by the governor's office, with the hope of stimulating the public to "go solar". In 1979, President Jimmy Carter installed solar panels on the roof of the White House. In 2006, Governor Schwarzenegger approved the "California Solar Initiative" with the stated goal to put solar on a million roofs in the state by 2016. The Obama Administration has passed the "American Recovery and Reinvestment Act of 2009" which, so far in history, is the single largest investment for renewable energy and energy efficiency. Substantial new demand for solar power has been created due to the setting of national renewable electricity standards by the administration. For California, teeth were added when in 2009 a bill was passed which mandated that Californians would obtain 20% of their energy from renewable sources by 2010 and 33% by 2020. It would appear that the technology, interest, demand and necessity have been fully demonstrated. It is time to "walk the walk."

Around The World

Throughout the world, new incentives are being provided by governments for the development of solar energy.

Germany, a country fairly close to the Arctic Circle, now generates more than half the solar power in the world and in so doing, has made itself the world center for solar research, engineering, manufacturing and installation. Germany's PV capacity is more than 5 gigawatts and has created thousands of jobs in the process.

China has determined that clean-tech is going to be one of the next global industries and is now creating a massive domestic and export market for solar and wind energy.

One of the world's largest solar equipment producers, based in Silicon Valley, California, has built 14 solar panel factories worldwide in the last two years, and not one in the U.S. Five were built in Germany, four in China, one each in Spain, Italy, India, Taiwan and Abu Dhabi. The governments of these countries have put prerequisites in place for growing a renewable energy industry. One of the key provisions, common to most of these countries, is the provision that guarantees a reasonable payback - from the utility company to the property owner - for any excess energy which they produce. This provision works as a real incentive for property owners to make the financial commitment for rooftop solar.

NARRATIVE

Primary Issues

On May 11, 2010, the County Board of Supervisors adopted the Conservation and Open Space Element (COSE) latest update. That document consists of nine chapters including a chapter on Energy. The COSE is a comprehensive long-range planning policy document for utilization, preservation and management of natural resources and open space. The Energy chapter emphasizes the value of distributed power generation (also known as local power). The viability of generating sufficient levels of sustainable energy has become a source of debate. To this end, the County Board of Supervisors has been investigating methods to make energy retrofits of existing homes and businesses more economically viable to property owners. One financing approach that the board of supervisors has committed to participate in is the CaliforniaFIRST pilot program. (See next section on AB 811)

Another major issue is the review of, and approval for, the construction of large scale solar energy projects in the Carrizo Plains.

Assembly Bill 811 (AB 811)

In 2008, the California State Legislature passed AB 811 to enable voluntary property-based financing for energy-saving improvements. This legislation is intended to help overcome one of the major barriers to clean energy installations -- the upfront cost. Under AB 811, property owners can enter into a plan to finance the installation of rooftop solar, as well as other energy efficient improvements that are permanently fixed to the property (residential, commercial or industrial). The financial arrangements of AB 811 allow for property owners to obtain low-interest loans that would be repaid as an item on their property tax bill.

It is estimated that in 2009, photovoltaic (PV) panels dropped in price by approximately 15 %, but the initial cost for rooftop solar to homeowners can still be prohibitive. A local solar distributor / installer, interviewed by the Grand Jury, estimated that an average system for a single family home could cost up to \$35,000. He also pointed out that the three most common ways to pay for such an installation are not necessarily attractive: home equity loan, line of credit or personal savings. The county is working to help solve the problem of the initial cost of a rooftop installation and costly upgrades to older homes by joining an AB 811 program called CaliforniaFIRST.² Funds for retrofitting the county's older homes (90,000 homes built prior to 1990)³ and commercial buildings will be available through this program.

In 1978, Title 24 of the state's "Energy Efficiency Standards for Residential and Nonresidential Buildings" significantly increased the energy efficiency standards for both homes and commercial buildings. Older homes and commercial buildings can, however, be retrofitted to be even more energy efficient by improving insulation, replacing single pane windows, installing more efficient heating and air conditioning units and switching to light bulbs and fixtures that draw less energy.

² CaliforniaFIRST is a statewide government coalition organized by the League of California Cities and the California State Association of Counties.

³ Estimate by San Luis Obispo County Planning and Building Department

All improvements that are permanently fixed to the structure are eligible for the CaliforniaFIRST program. This includes the addition of a rooftop solar system.

It is important to note that the county would not have financial liability with the CaliforniaFIRST program, and would not need to issue bonds. The details of the program for county residents who are interested in applying for these loans are nearly complete and will be available to consumers by Fall of 2010. To qualify, the property owner will need to obtain an energy audit by a certified professional inspector which will identify qualifying improvements. It is anticipated that loans under this program will carry an interest rate of 7 – 7.5% and will have a term of 10 to 20 years. The payments would be attached to the property tax bill. Grant Funds from a State Energy Program will be used to buy down the interest rate to make the loan more attractive and affordable for the property owner.⁴ If the property is sold before the loan is paid off, the buyer will continue paying off the balance of the loan on the property tax bill.

Large Scale Projects

Currently, the county is looking at applications from two private companies desiring permits to build and operate solar energy producing installations in the California Valley (better known locally as the Carrizo Plains). The combined output will be 800 MW and the facilities could be operating in 2012 or 2013. The environmental issues are many. The job and property tax revenue potential are important considerations. When considering these projects, the enormous amount of sustainable, renewable energy that would be produced must be balanced against environmental concerns.

The Good News:

The two projects are located in California Valley, a remote area in the southeast corner of San Luis Obispo County. Together the projects will cover 6,100 acres on both sides of Highway 58. Both are in the planning process and both hope to begin construction by the end of 2010. Topaz Solar

⁴ June 10, 2009 – SLOCOG Staff Report

Farm (owned by First Solar) will utilize static photovoltaic (PV) panels facing south and will produce 550 megawatts of power. California Valley Solar Ranch (owned by Sun Power) will use PV panels that rotate to track the sun's movement, and will generate 250 megawatts of power. The latter project is not adjacent to existing transmission lines so 2.5 miles of new transmission lines must be built. The height of the panels varies from 5 feet for the static panels to 15 feet high for the tracking panels.

PG&E has contracted to buy the total output of electricity from the projects – 800 Megawatts, but does not have ownership or financial investment in the construction of the installations. Currently, solar energy is one of their least cost effective methods of producing renewable energy and accounts for less than 1% of the energy sold by PG&E. However, due to improved technology in recent years, PG&E is now seeing solar energy being offered at competitive prices.⁵ Combined with the State's mandate for utility companies to obtain from renewable sources 20% of the energy by 2010 and 33% by 2020, the timing is right for great expansion of the solar industry.

The Bad News:

The need for clean, renewable energy is clear. However, the proposed solar projects do not meet with approval from all sectors. The California Valley is considered to be both an ideal location and a poor choice for large scale solar operations.

The county's land use document specifically identifies Carrizo Plain as a suitable location for a large scale solar facility. The area gets near continuous sunshine, is sparsely populated and the agricultural value of the land is considered marginal. Infrastructure in the way of roads and existing transmission lines already exists. Jobs would be created. Additional property tax income to the county would be significant.

⁵ Provided by an authorized PG&E representative

On the other hand, some private citizens and environmental groups such as the Sierra Club⁶ have voiced objection to the proposed projects. Biologists have surveyed the area and have identified some 70 rare and potentially endangered animals said to be living there, including kit foxes, coast horned lizards, the San Joaquin Coachwhip snake and kangaroo rats, to name a few. The area is the last of the native California grasslands. The grassland is so ecologically valuable that President Clinton established the Carrizo Plain National Monument in the year 2000. The National Monument encompasses almost 250,000 acres. The proposed new solar plants will cover 6,100 acres and are not within the boundaries, but are adjacent to, the National Monument. Because of the potential impact on the wildlife, the State Energy Commission has hired a consulting firm to perform a study that will provide information to explore the issue. In addition, the people who live in the valley and who moved there for its beauty and tranquility may be impacted by construction noise, visual elements and traffic.

Another argument suggests that if locally generated energy (rooftop solar) was properly promoted and supported by local government, there would be no need for large utility-scale power plants. Depending on whom you listen to and where you read it, “distributed energy” (rooftop solar) could produce all the energy requirements that California needs to achieve its goal of 33% renewable by 2020. And, as a bonus, reduce energy prices, eliminate environmental impacts and create jobs.

Underlying Issues:

Assembly Bill 920 (AB 920)

In 2009, California lawmakers voted to establish “payback” for excess energy produced by homeowners’ rooftop solar installations. Prior to this decision (AB920), local utilities followed “net metering rules” which gave homeowners a credit on their monthly bill that could be used to offset higher energy consumption at other times of the year, but at the end of the year, any leftover credits were zeroed out. AB920 requires utility companies to either directly pay homeowners for

⁶ Santa Lucian - The official newsletter of the Santa Lucia Chapter of the Sierra Club – May, 2010

this excess energy, or they may roll the credit over to the next year. Rates will be determined by the California Public Utilities Commission, and likely will be below retail. While the compensation to the homeowner will probably not be a significant amount of money, any excess energy which is produced will offset the upfront cost of the homeowner's solar equipment and will no longer be "given away" only to be resold by the utility company.

Cost of installation

While the number of new rooftop solar installations has increased over the last several years, the total number of solar installations remains relatively small in this county, as well as nationwide, and private industry has not been inspired to invest a great amount in advertising or research and development. A new technology called "Thin-Film" solar is on the rapid rise and could revise current thinking. Thin-Film solar modules are less efficient at converting sunlight to electricity than traditional crystalline modules – which are made from silicon wafers – but they can be produced at a significantly lower cost and because of their flexibility greatly simplify the process of installation – another major cost savings.

Potential Market Opportunity

There are approximately 114,000 single family homes in San Luis Obispo County. County planning department statistics indicate that in 2009, 214 applications were received for solar installations. In 2008 there were only 167 applications. With 114,000 potential rooftops⁷, clearly solar energy is not being fully utilized.

CONCLUSION

The local governments of San Luis Obispo County could find great advantages in cooperating on an aggressive solar power initiative. Sunlight is abundant, particularly in the northern and inland reaches of the county. Investment now in solar facilities for public buildings could pay dividends

⁷ County planning department estimate

for years. Funds and incentives are being made available to encourage individual homeowners to install rooftop solar. The creative mindset of local business leaders has been successful in taking advantage of the growing interest locally, nationally and worldwide in so-called “green jobs.”

It’s time for cities to join the county in leading this effort. So far, the path has been outlined at the county level but more commitment remains elusive. It is difficult to dispute that any solar development that is economically feasible will produce major job and economic benefits. The environmental problems with the installations on the Carrizo Plains may be able to be mitigated. Certainly compromise could help on both sides of that argument. A county effort to “buy down” the cost of rooftop installations would pay off in jobs and very possibly in future energy savings for taxpayers as a whole.

In summary, the Grand Jury believes it is time to take advantage of our assets:

- Our local geography – lots of sunshine
- Our talented work force that is searching for opportunities in the face of a difficult economic climate statewide
- Federal and state government interest typified by the American Recovery and Reinvestment Act of 2009, AB 811, CaliforniaFIRST and AB 920
- The current recognition nationwide of the need for reduction of our dependence on fossil fuel emphasized by the Gulf of Mexico oil spill of April 10, 2010

To make these gains locally will take a lot more than talk, however. Bold leadership is a must. That may well require that the county establish a new leadership position to oversee all the programs, grants and opportunities that are available in order to maximize the county’s position.

FINDINGS

1. The State mandate to obtain increasing amounts of energy from renewable sources is driving government agencies to investigate new sources.
2. Many government buildings, parking structures and schools are candidates for rooftop solar.
3. The Carrizo installations would be beneficial to the county, in that they would provide significant revenue from property taxes, and contribute toward the renewable energy requirement for the county.
4. The first steps toward energy efficiency should start with retrofit of pre-1990 homes and buildings.
5. Outreach and support by the county for AB 811 is essential to make retrofit and rooftop solar a viable option.

RECOMMENDATIONS

1. The County Board of Supervisors and City Councils of all the county's incorporated cities should actively promote and implement the AB 811 retrofit and rooftop solar program.
2. The County Board of Supervisors and City Councils of all the county's incorporated cities should use the media to educate and encourage local residents and businesses to invest in solar power.

3. The County Board of Supervisors and City Councils of all the county's incorporated cities need to inventory all government building rooftops as potentials for solar installation.
4. The County Board of Supervisors should use grant funds to make AB 811 projects more affordable (i.e. pay for audits or "buy down" interest rates).
5. The County Board of Supervisors should create a new position in the county to be responsible for all "Renewable Energy" programs.

REQUIRED RESPONSES

The County Board of Supervisors is required to respond to Findings 2, 4 & 5 and Recommendations 1 - 5. The responses shall be submitted to the Presiding Judge of the San Luis Obispo Superior Court by **September 23, 2010**. Please provide a copy of all responses to the Grand Jury as well.

The City of Arroyo Grande is required to respond to Findings 2 & 4 and Recommendations 1 - 3. The responses shall be submitted to the Presiding Judge of the San Luis Obispo Superior Court by **September 23, 2010**. Please provide a copy of all responses to the Grand Jury as well.

The City of Atascadero is required to respond to Finding 2 & 4 and Recommendation 1 – 3. The responses shall be submitted to the Presiding Judge of the San Luis Obispo Superior Court by **September 23, 2010**. Please provide a copy of all responses to the Grand Jury as well.

The City of Grover Beach is required to respond to Findings 2 & 4 and Recommendations 1 - 3. The responses shall be submitted to the Presiding Judge of the San Luis Obispo Superior Court by **September 23, 2010**. Please provide a copy of all responses to the Grand Jury as well.

The City of Morro Bay is required to respond to Findings 2 & 4 and Recommendations 1 - 3.

The responses shall be submitted to the Presiding Judge of the San Luis Obispo Superior Court by **September 23, 2010**. Please provide a copy of all responses to the Grand Jury as well.

The City of Paso Robles is required to respond to Findings 2 & 4 and Recommendations 1 - 3.

The responses shall be submitted to the Presiding Judge of the San Luis Obispo Superior Court by **September 23, 2010**. Please provide a copy of all responses to the Grand Jury as well.

The City of Pismo Beach is required to respond to Finding 2 & 4 and Recommendations 1 - 3.

The responses shall be submitted to the Presiding Judge of the San Luis Obispo Superior Court by **September 23, 2010**. Please provide a copy of all responses to the Grand Jury as well.

The City of San Luis Obispo is required to respond to Findings 2 & 4 and Recommendations 1 - 3. The responses shall be submitted to the Presiding Judge of the San Luis Obispo Superior Court by **September 23, 2010**. Please provide a copy of all responses to the Grand Jury as well.

The mailing addresses for delivery are:

Presiding Judge	Grand Jury
Presiding Judge Charles S. Crandall Superior Court of California 1050 Monterey Street San Luis Obispo, CA 93408	San Luis Obispo County Grand Jury P.O. Box 4910 San Luis Obispo, CA 93402